

# Chapter 7. Finance Planning Framework

## About This Chapter

California has been challenged with managing water resources to provide reliable water supplies, reduce flood risks to public safety, grow the economy, and enhance ecosystems—and do this all within the setting of an economic downturn, rising public sector debt, and weakening public support for additional investments. This chapter addresses the challenges to financing future programs and activities outlined in earlier chapters.

This chapter is written from the State government’s perspective and is intended to guide IWM decisions regarding investment of State government funds. The scope includes IWM programs and projects directly administered by State government as well as future State government IWM loans and grants that are distributed as incentives to regional and local governments. This framework is not intended to direct regional or local finance decisions; nor is it intended to modify existing State government investment frameworks for ongoing financial activities such as distribution of currently authorized G.O. bonds.

Several State agencies and other Update 2013 participants worked together to develop a framework for the finance planning effort. The financing framework, also known as the finance storyboard, laid out components for sequential development and provides a structure for financial planning. This chapter is laid out in the same order as components of the storyboard. The chapter begins by describing the scope of IWM as well as the types of IWM activities that should be considered for funding. To better understand the challenges ahead, this chapter provides a background of how existing infrastructure was put in place, plus describes historical Federal, State, and local water expenditures since 1985. The role that State government should play in future financing efforts is discussed. The magnitude of the investment that California is facing is discussed along with potential funding mechanisms that might be considered. Because the financial resources are limited compared to the investment needs, prioritization of the activities and programs is an important part of the framework.

This Update 2013 Finance Framework chapter is organized with these topics:

- Findings
- Framework
  - IWM Scope and Outcomes
  - IWM Activities
  - Existing Funding/Expenditures
  - Funding Stability
  - State Government Role and Partnerships
  - Future Costs
  - Funding, Who and How
  - Trade-Offs
- Next Steps

The terms finance and fund tend to be used interchangeably, and often refer to the other in their own definition. For this chapter:

- Fund will refer to a supply or stock of money
- Funding will refer to making a supply of money available for a need, program, or project
- Finance will refer to the management of money, which could include things like borrowing, developing a revenue stream, etc.

## Findings

The purpose of this section is to highlight major finance related findings derived from the data, analysis and stakeholder collaboration conducted as part of the Update 2013 process. The findings represent a significant step forward in the comprehensive understanding of complex finance mechanisms that, over time, were created in a fragmented fashion. The findings helped develop the framework described in this chapter as well as informed the finance objective and related actions in Chapter 8 – Implementation Plan. The findings are grouped into four categories—existing financial conditions, organizational/alignment, demand for funding, and prioritization.

### Existing Financial Conditions

- Local entities such as special districts, water districts, utilities, and cities currently account for the largest portion of IWM expenditures and are expected to continue this role for the foreseeable future.
- Federal investment has historically been the primary source of funding for flood management, but is decreasing relative to State government and local investments.
- State government investments since the turn of the century have been successful in incentivizing local investments in water related projects.
- Water projects at all levels of government are commonly underfunded.
- Cross cut budgets for IWM activities are not compiled.
- There is a lack of common understanding on current finance conditions and approaches resulting from, in part, many agencies providing similar services in the same proximity.
- Even with passage of State G.O. Bonds since 2006, State government expenditures for supporting IWM are inflexible, variable (i.e. annual funding levels) and unpredictable. This stems from how bond funds can be used and an inadequate level of annual general fund support for IWM.
- Total authorized bond debt across all State government activities rose from \$38 billion in 1999 to \$128 billion in 2011. On a per capita basis, total G.O. bond debt rose from \$1,130 to over \$3,400.
- Total authorized water related bond debt rose from \$x in 1999 to \$y billion in 2011, about 20 percent of total bond debt. On a per capita basis, water related bond debt rose from \$A to over \$B requiring an annual debt service of \$C per capita.
- State government revenues from special projects and fees have steadily increased from \$X in 2001 to \$Y billion in 2010.
- Existing state bond funding for flood management will be depleted by 2017.
- Financing of capital improvements and O&M projects is an ongoing challenge for agencies because funding sources are limited, and funds are unreliable due to competition among agencies for resources, reductions in property tax revenues, and costs associated with permitting and mitigation of projects.
- Local agencies are constrained by various statutes and restrictions that govern financing considerations.

### Organization/Alignment

- Management for water supply, flood management and ecosystem projects, often in the same location or system, continues to be funded separately.
- Overlapping-and sometimes conflicting-responsibilities and priorities among the many regulatory agencies complicate and/or increase the cost of the task of protecting human life, property, economic interests, and the environment.

- Poor alignment of projects among public agencies affects our ability to fund and deliver efficient and economical multiple-benefit projects.

### Demand for Funding

- \$575 billion in structures are at risk in the 500 year floodplains. This doesn't include economic impacts to families, communities, local businesses, and entire regions when worksites and public facilities are closed due to flood damage.
- More than \$50 billion in existing needs have been identified for flood management projects, which exceeds available funding sources.
- While studies have not yet quantified other needed water supply, wastewater, and ecosystem investments, these could be several \$100 billion.
- The costs of ongoing operations and maintenance on existing facilities, along regulatory costs, consume a large portion of local agency budgets. In addition, local agency budgets are often unable to budget replacement funds for aging infrastructure.
- IWM planning and finance have not adequately covered monitoring, operations, maintenance, and environmental mitigation over the life of a project.

### Prioritization

- There is no clear process of State, Federal, and local agency roles in project prioritization or in establishing finance strategies.
- DWR and other State agencies have not defined a consistent process for prioritizing projects across IWM activities.
- Disadvantaged communities and vulnerable populations in that they are often unable to represent themselves in water related decisions and investments.

### Local IWM Funding

- Water management agencies often compete with other public demands for resources. Flood management agencies are often supported by local agency general funds and must compete with other public demands for resources such as wastewater (sewer), transportation, parks, social services, education, and health services.
- Flood management agencies have substantial restrictions to increasing property assessments due to Propositions 13 and 218. The majority of flood management agencies depend on some type of property assessment as a revenue source; however, the ability to increase or initiate property assessments to satisfy revenue requirements has been restricted for some time in California.
- Agencies that are partially funded through development fees or special projects assessments can be limited by assessment-zone boundaries. These assessment-zone boundaries impose substantial limitations on the uses of funds. This is important because flooding, water supplies or water quality are affected by activities occurring upstream of zone boundaries. In addition, the solution or best management action for providing IWM benefits might be located outside the assessment-zone boundary.
- Funding for water management projects is often dependent on infrequent natural events, such as droughts or floods that temporarily raise public awareness. Funding for water management usually increases only following a flood disaster or drought and then gradually decreases, especially during economic downturns.

- Agencies that depend upon impact fees are affected by the slowdown in growth. Although impact fees are a good option for growing communities, this source of revenue dries up when growth is stagnant.
- Water management budgets and project planning costs often do not adequately address full life-cycle O&M needs and environmental mitigation. A significant amount of existing water management infrastructure was constructed before the requirements for environmental mitigation were included as a component of project development. Many of these projects now face new permitting requirements with associated higher, unplanned costs. This has led to benign neglect of some infrastructure and costly re-permitting for other projects. Also, many projects do not include the full life-cycle cost of O&M during project development. This funding deficit is affecting the ability of agencies to set aside replacement funds for deteriorating infrastructure.
- Environmental impacts created long ago, known as legacy impacts, no longer have responsible parties to pay for mitigation.
- Smaller agencies often do not have the resources to prepare funding applications. Because some of the information requested on grant or loan applications is information not typically collected by the agency and not quickly developed, smaller agencies might not have the resources to prepare an effective application.
- Disadvantaged communities do not have the ability to pay for water infrastructure improvements.
- Agencies have difficulty raising matching funds for Federal programs. Many of the agencies are somewhat dependent on Federal or State funds for major capital improvements; however, with limited local revenue generation, many agencies cannot access some of the available Federal funds because they cannot raise the required matching funds.
- Agencies believe Federal funds are becoming scarcer. The USACE process for identifying Federal interest in flood risk-reduction projects has historically emphasized damage-reduction benefits, while placing less emphasis on other project output such as ecosystem restoration, regional economic development, and other social benefits. With the fiscal issues facing the Federal government, most agencies believe that Federal funding programs will be reduced, if not eliminated. Reductions in Federal spending signal that USACE might not continue to fund studies or ongoing projects at the same rate as in the past. Also, funding a large number of studies and projects over long periods is inefficient and results in delayed project development and increases project costs.
- Bonds do not include monies for operation and maintenance. Bond funds cover specific time periods and subsequent bonds to continue funding are not assured.

## Framework

During the Update 2013 process, a finance storyboard was developed through extensive collaboration with the Public Advisory Committee, Tribal Advisory Committee, Finance Caucus and other Update 2013 participants. It was developed in response to observations and stakeholder input that there was no common language or understanding of the finance methods and issues across California's geographic regions, IWM strategies or levels of government (e.g. local, state, federal, Tribal). The finance storyboard was the thought process that developed into the financial framework described in this chapter.

The purpose of the finance storyboard for Update 2013, and beyond, is to provide a framework to organize and describe the suite of issues and methods that are critical for advancing a statewide IWM finance planning effort. It also provided the structure and the flow of logic required to synthesize a large volume of information and stakeholder input such that it supports actionable IWM finance objective and related actions for State policymakers. More specifically, this storyboard provided an approach for the diverse California Water Plan stakeholders and planning partners to discuss and develop a common language and understanding about the role of State government funding and investment in integrated water management (IWM)-related activities.

The financial framework is organized into eight components:

1. Scope and Outcomes
2. IWM Activities
3. Existing Funding/Expenditures
4. Funding Stability
5. State Government Role and Partnerships
6. Future Costs
7. Funding, Who and How
8. Trade-Offs

Each component represents a significant topic that stakeholders and planners felt needed to be part of any statewide IWM finance planning effort. The sequence of the components represents the necessary chronology of the planning effort. For example, it is necessary to define the scope of IWM (component 1) prior to discussing the State Government Role (component 5). It is also necessary to clarify the role of State Government prior to estimating future funding demand for said role. Note that the traditional finance planning topic of apportioning costs and identifying funding methods does not occur until component 7.

The following sections describe each component of the financial framework.

## IWM Scope and Outcomes

The purpose of this section is to define the scope of State governments' future involvement in IWM activities along with the expected outcomes. The Finance Caucus approached this by describing the targeted benefits hoped to be achieved from the State's investment into IWM. These benefits are described in the table below. Additional information on this topic can be found in chapters 2 and 3.

**Table 7-1 IWM Targeted Benefits**

<b>IWM Benefit Type</b>	<b>Definition</b>
Affordability	Occurrence of water supplies of sufficient quality, certainty and cost to enhance or serve disadvantaged communities, sustain diverse portfolios existing and future of economic activities as well as achieve water costs that enable, at a minimum, current levels of standard of living.
Drought Preparedness	The magnitude and probability of economic, social or environmental consequences that would occur as a result of a sustained drought.
Energy	Efficient use, or increases in production/recovery of, energy associated with managed and unmanaged water use, storage, treatment, distribution and/or reuse.
Environmental	Preservation or restoration of the fish, wildlife, natural processes/functions, habitat and other aquatic resources for the continued viability of natural heritage, self-sustaining ecosystems and/or biodiversity. (e.g. recovery of sensitive species, control of invasive species, adequate water supply and quality)
Flood Damage Reduction	Reduce the adverse impacts of floods to human and natural systems through a portfolio of structural and non-structural measures that address their vulnerability, exposure and recovery during flood events. This includes pre-flood planning and hazard mitigation, emergency preparedness and response activities, and post-event repairs (including environmental infrastructure repairs).
Food Security	Adequate reliability, affordability, and supply of water, land and other natural resources to reliability to support domestic production of food, fiber, livestock, and other farm products to meet current and forecasted consumer demands.
Fuel Load Management	Fuel reduction involving the modification of vegetation in order to reduce potential fire threat, reduce the risk of high severity wildfires thereby; (1) preserving water quality and natural water treatment processes within watersheds; (2) avoidance of downstream sedimentation impacts on water supply; and/or (3) improve wildlife habitat capability, timber growth, or forage production.
Groundwater Overdraft Reduction	Avoidance of the condition of a groundwater basin in which the amount of water withdrawn by pumping exceeds the amount of water that recharges the basin over a period of years during which water supply conditions approximate average conditions.
Operational Flexibility and Efficiency	Optimization of existing legal, operational and management procedures for (and/or physical modifications to) existing water management faculties to improve the efficiency of existing water operations or uses (e.g., irrigation)
Reduce Climate Change Impacts	Development and implementation of strategies that improve resiliency, reduce risk, and increase sustainability for water and flood management systems and the ecosystems upon which they depend.
Water Dependent Recreational Opportunity	Opportunities for water-dependent recreation for California's residents, communities and visitors now and into the future (e.g. skiing, fishing, kayaking, etc)
Water Quality	Chemical, physical, and biological characteristics of water, usually in regard to its suitability for a particular purpose or beneficial use for the enhancement or preservation of public and environmental health
Water Supply and Supply Reliability	Occurrence of water supplies of sufficient quality and certainty to enhance or sustain and grow current types and levels economic activities, ecosystem health and maintain quality of life

## IWM Activities

This section describes the types of IWM activities that need to occur to generate the identified targeted benefits. It includes investment categories to be used for guiding State government IWM investment (i.e., generally roll-ups of various types of regional projects or programs) in a way that is relevant to regional activities (i.e., generally project-level). More information on this topic can be found in chapter 3.

Categorization of future investments also helps formulate multi-objective solutions that are comprised of combinations of the activities described below. Through intensive collaboration with the Update 2013 Finance Caucus, the categories presented below also helped build a common language and bridge bureaucratic and policy-making silos. This approach will be useful for aligning funding and finance planning processes across more than 2,300 local, State, and federal government agencies; each with its own planning processes and scales (e.g. project-level scale at the local level and the higher level investment categories that State policy-makers use).

The two primary categories of investment are innovation and infrastructure. Innovation and infrastructure are further broken down into investment categories. These categories could be used for allocating future State government investments.

Innovation includes actions that improve information, institutional, and technological activities essential for supporting IWM. Innovation categories include:

- **Governance improvements** to promote more coordinated and integrated resources planning among State government agencies and with regional collaboratives and federal agencies.
- **Planning/Public Process improvements** to promote and incentivize communication, coordination and collaboration among water planners/managers, land use planners/decision-makers, and other resource managers at the regional and watershed scale. This also includes strengthening alignment of government agency data/information, plans, programs, policies and regulations.
- **Information technology improvements** to promote and incentivize water data collection, management, distribution, access, and exchange/sharing; and analytical methods.
- **Research & Development** to advance, improve and commercialize new water/energy technologies, improve data collection & exchange, and develop analytical tools for integrated water management

Infrastructure includes structures and facilities that support human activities, but it also includes green infrastructure (i.e naturally occurring assets and services such as wetlands, riparian habitat and watershed systems). The categories listed below include not only the capital cost of constructing a facility or restoring habitat, but also the long term operation and maintenance costs which have often been an afterthought to implementation and not adequately financed over their useful life (i.e. the accumulation of significant deferred maintenance and aging infrastructure). Infrastructure categories include:

- **Local and Regional projects** included in IRWM Plans and/or its component plans (these projects would include different mixes of the Water Plan's 30 resource management strategies depending on the region/location). Within a region, projects would also include portions of the region such as local projects or those at the groundwater basin scale.

- **Inter-regional projects** that would benefit two or more regions.
- **Statewide systems** for water, flood, water quality, ecosystems and wastewater management that provide public benefits.

## Existing Funding/Expenditures

This section specifies the levels and source of recent and current IWM expenditures. It includes a brief summary of historical local, state and federal expenditures based on the defined scope of IWM. Much more detailed data, metadata and information on this topic are included in the Volume 4 Reference Guide.

### Historical Overview

Historically, funding for water management in California has been provided by a combination of local, State, and Federal agencies. Figure 7-1 shows the general historical spending and funding eras over the past 160 years, using broad categories. Starting with the Gold Rush, initial major infrastructure was put in place to bring land into production. Over the next several decades, multipurpose infrastructure projects were built. In the latter decades of the 1900s, investment shifted to environmental protection projects. Shifts in financing eras are a result of major events, natural and human, and are generally reactive in nature. This century has seen several State bonds passed for infrastructure purposes, including flood management, as well as significant Federal funding. More information on historical funding can be found in Chapter 2 and in Volume 4 Reference Guide.

#### **Figure 7-1. History of Funding for Water Management in California**

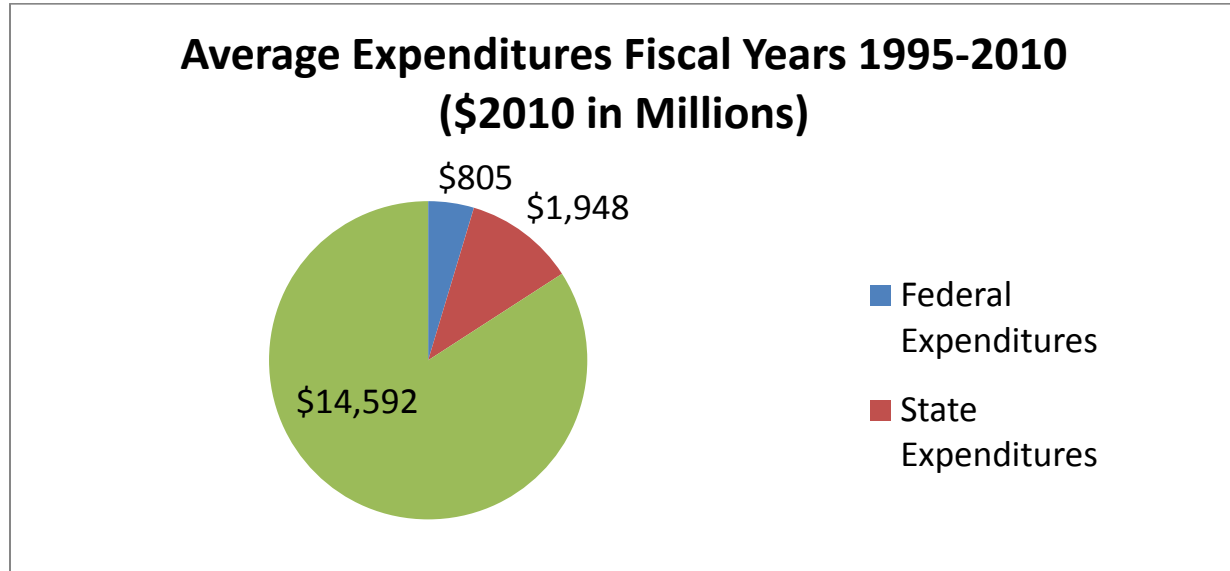
**NOTE: This graphic is under Development**

### Local, State, and Federal Expenditures, 1995 to 2010

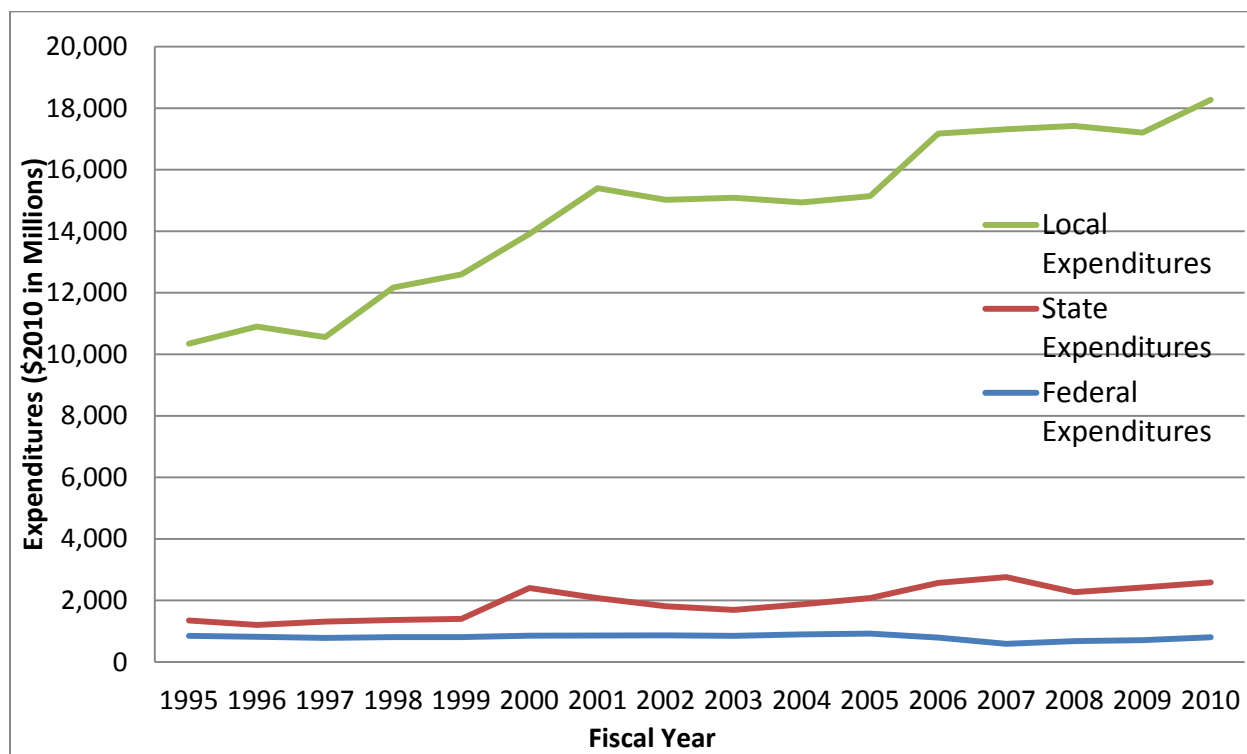
Figure 7-2 illustrates the average proportion of water management expenditures by local, State, and Federal agencies between 1995 and 2010. Local agencies account for the largest portion of expenditures, averaging \$14.6 billion per year, followed State agencies at \$1.9 billion and Federal agencies at \$805 million per year. Expenditures vary over time, depending on factors such as State and Federal appropriations and bond measures.



Figure 7-2. Recent Annual Expenditures on Water Management in California, 1995-2010



Figures 7-2 and 7-3 show that local agencies are responsible for the majority of the total expenditures. Between 1995 and 2010, annual project expenditures for water management in California ranged from approximately \$12.5 billion to \$21.7 billion, as shown in Figure 7-3. This figure shows total expenditures for flood management in California by local, State and Federal agencies. Between 1995 and 2010, there were significant short-term bond infusions of funding for specific State projects. In FY 2008/2009, Federal expenditures have a one-time increase for shovel-ready projects due to the passage of American Recovery and Reinvestment Act (ARRA).

**Figure 7-3. Recent Trends in Local, State, and Federal IWM Expenditures (in millions) 1995 – 2010.**

## Funding Sustainability

This section provides a high level description and qualitative summary of funding sources currently being used and the role of state bonds in integrated water management. This is intended to help focus planning efforts on IWM activities that are currently unfunded, have no foreseeable funding alternatives or are currently funded in an unsustainable manner. More information on this topic can be found in chapter 3.

### Existing Funding Mechanisms

System capital improvements and ongoing maintenance and operation costs are typically financed with cash-on-hand or by issuing debt. Cash financing is typically supported by user fees or taxes that support a general fund. User fees include volume-usage charges and service fees which are typically fixed, such as residential connection charges. Cash is typically used to pay for O&M costs and larger capital project costs are primarily financed by issuing debt. Debt financing includes various types of bonds ranging from G.O. bonds, backed by the General Fund, to builder bonds backed by special assessment districts. Access to different types of capital markets varies across state and local agencies.

Federal finance strategies typically involve the federal treasury financing water management projects selected based on cost benefit analyses. Direct project beneficiaries reimburse the costs through user fees. For example, Central Valley Project water supply contractors pay for water deliveries which finance CVP costs.

The state uses bonds to finance new water management capital projects, including general fund supported bonds and revenue bonds. General Obligation (G.O.) bonds are backed by the taxing power of the state

and paid off from the General Fund. Financing for water infrastructure at the state level has increasingly relied on G.O. bonds in recent years. G.O. bonds provide an infusion of capital to finance construction but may not adequately provide for O&M, and ongoing repair costs. The state also uses lease-revenue bonds which are similar to G.O. bonds but are not backed by the General Fund and do not require voter approval. Revenue bonds are not supported by the General Fund and are repaid by a revenue stream, typically user fees.

Local agencies primarily finance water management projects with revenue bonds. Revenue bonds are backed by user fees and typically carry a higher interest cost than G.O. bonds. Some projects are financed by local G.O. bonds backed by local property taxes, although this is less common due to two-thirds voting requirements from Proposition 218. Local agencies additionally have access to state revolving fund (loan) programs and state-local assistance grants. These typically involve cost-sharing between local and state agencies.

Table 7-2 summarizes water management financing mechanisms that have been traditionally used at the state and local level in addition to user fees. The appropriate uses, the feasibility, key trade-offs, and applicability in California for these mechanisms are described in Table 7-2.

**Table 7-2. Traditional State and Local Finance Mechanisms**

Finance Strategy	Appropriate Uses	Feasibility	Key Tradeoffs	Application in California
Revenue Bonds	Projects where a dependable revenue stream is available	A standard method of financing	None	A typical method of financing for local and state projects
User Fees	Projects where direct beneficiaries are easily identified.	Potentially works well with clearly defined beneficiaries, less likely to work for projects with significant public benefits.	Will focus projects to those with local scope which may undermine IWM efforts. May limit state's ability to increase fees and taxes to support other projects.	State Water Project is an excellent example as over 90% of project cost will be repaid by direct beneficiaries (contractors)
Assessment Districts	Can be formed by majority vote but must support local projects that do not provide a "general" public benefit. Water and storm water projects are generally allowed under assessment districts.	The state could coordinate with local agencies to establish assessment districts.	Assessment districts cannot be used to support general public benefits and, as such, will tend to focus on local projects.	1911 and 1913/1915 assessment districts are widely used by local agencies in California.

Finance Strategy	Appropriate Uses	Feasibility	Key Tradeoffs	Application in California
Impact Fees	Used by local governments to charge new development for the additional cost imposed on existing public infrastructure.	Impact fees are generally used in over 90% of local governments in California, thus there is limited opportunities for further expansion.	Deters new development.	Widely used in California
Mello-Roos Special Taxes	Areas with new development. It is possible to establish Community Facility Districts in other areas, but this requires a majority vote by residents to tax themselves.	CFDs are most feasible during strong housing markets when there is significant new development.	When housing markets and development slows, forming additional CFDs is difficult and there may be concerns with revenues to pay back existing bonds.	Recently used to finance the Bear River Levee Setback project in Yuba County

## Role of California Water Bonds

This section summarizes data for California water bonds issued between 1970 and present. This section also includes a summary of other G.O. bond debt, including schools and other infrastructure, in order to put the level of water bond debt into context. Water related bonds make up a larger portion of total bond debt in recent years. Revenue bonds are also an important source of financing for capital projects, which are not supported by the General Fund and are generally used by local agencies, but are not included in this section summary. The general trend shows an increase in G.O. bond financing of water projects and this is increasing as a portion of total G.O. bonds in the State.

Table 7-3 summarizes water management related bonds that were passed in California. In constant 2010 dollars, a total of \$32.4 billion in water bonds have passed in California since 1970. Of this \$32.4 billion, \$23.2 billion was passed since 2000. In other words, 71% of water bonds passed in California have been since the year 2000. This emphasizes the increased reliance on bonds for financing water infrastructure. Accordingly, the cost of bond debt service has been increasing, from around 8 percent of General Fund spending in FY 2001 to almost 36 percent in FY 2010 for resources and environmental programs. The debt-service ratio (ratio of debt service to annual revenues) is near 6 percent as of FY 2010.

**Table 7-3. California Water Bonds from 1970 to Present**

Year	Title	Base Amount (millions)	In 2010 Dollars (millions)
1970	Clean Water Bond Law of 1970 (Prop. 1)	250	1,504
1974	Clean Water Bond Law of 1974 (Prop. 2)	250	1,028
1976	California Safe Drinking Water Bond Law of 1976 (Prop. 3)	175	606
1978	Clean Water and Water Conservation Bond Law of 1978 (Prop. 2)	375	1,123
1982	Lake Tahoe Acquisitions Bond Act (Prop. 4)	85	185
1984	California Safe Drinking Water Bond Law of 1984 (Prop. 25)	75	150

Year	Title	Base Amount (millions)	In 2010 Dollars (millions)
1984	Clean Water Bond Law of 1984 (Prop. 28)	325	651
1984	Fish and Wildlife Habitat Enhancement Act of 1984 (Prop. 19)	85	170
1986	Water Conservation and Water Quality Bond Law of 1986 (Prop. 44)	150	290
1986	California Safe Drinking Water Bond Law of 1986 (Prop. 55)	100	193
1988	California Safe Drinking Water Bond Law of 1988 (Prop. 81)	75	138
1988	California Wildlife, Coastal, and Park Land Conservation Act (Prop. 70)	776	1,427
1988	Water Conservation Bond Law of 1988 (Prop. 82)	60	110
1988	Clean Water and Water Reclamation Bond Law of 1988 (Prop. 83)	65	120
1996	Safe, Clean, Reliable Water Supply Act (Prop. 204)	995	1,471
2000	Safe Drinking Water, Clean Water, Watershed Protection, and Flood Protection Act (Prop. 13)	1,970	2,632
2000	Safe Neighborhood Parks, Clean Water, Clean Air, and Coastal Protection Bond Act of 2000 (Prop. 12)	2,100	2,805
2002	California Clean Water, Clean Air, Safe Neighborhood Parks, and Coastal Protection Act of 2002 (Prop. 40)	2,600	3,305
2002	Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002 (Prop. 50)	3,440	4,372
2006	Disaster Preparedness and Flood Protection Bond Act of 2006 (Prop. 1E)	4,090	4,385
2006	Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006 (Prop. 84)	5,388	5,777

State G.O. bonds have become an important source of water and flood management funding. However, bond financing is a lumpy source of funding due to the discrete nature of bond approval and sale. This raises questions about the future reliability and predictability of bond financing for water projects. Table 7-4 shows total authorized state G.O. bonds as of 1999, 2005 and 2011. In 1999 total water bonds were \$3.8 billion, accounting for approximately 10 percent of total authorized State bonds. This increased to \$22.9 billion by 2011 or 18 percent of total authorized bonds, largely due to propositions 1E and 84. Current G.O. bonds are expected to be fully allocated by the year 2018.

**Table 7-4. Total Authorized GO Bond Debt in California\***

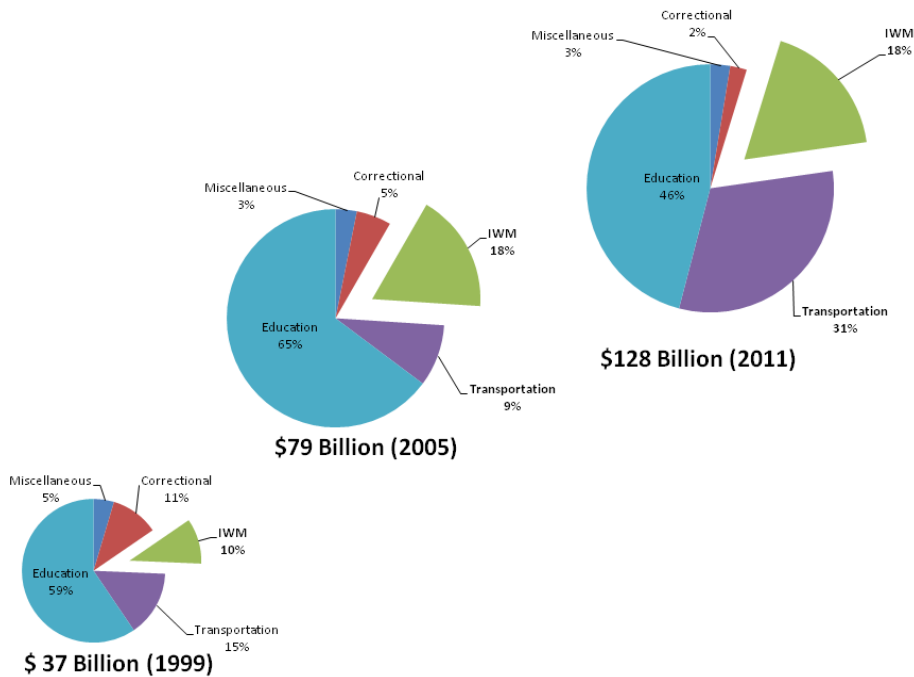
Category	1999	2005	2011
Miscellaneous	1.7	2.5	3.3
Correctional	4.1	4.1	2.8
<b>Total Water Bonds</b>	<b>3.8</b>	<b>14.0</b>	<b>22.9</b>
Transportation	5.6	7.2	40.0
Education	22.4	51.1	58.6
<b>Total</b>	<b>37.7</b>	<b>78.9</b>	<b>127.6</b>
Per Capita	1,127.2	2,191.9	3,407.9

\*\$ billion

Source: *State of California, 2010*

Figure 7-4 shows that funding for IWM has gradually increased as a portion of total bond funding. In 1999, IWM accounted for only 10 percent of the total. This increased to 18 percent by 2011. This increase was due to the State's shift in focus to approach projects using a more holistically multi-objective approach.

**Figure 7-4. Total Authorized General Obligation Bond Debt of the State of California**



Source: State of California, 2010

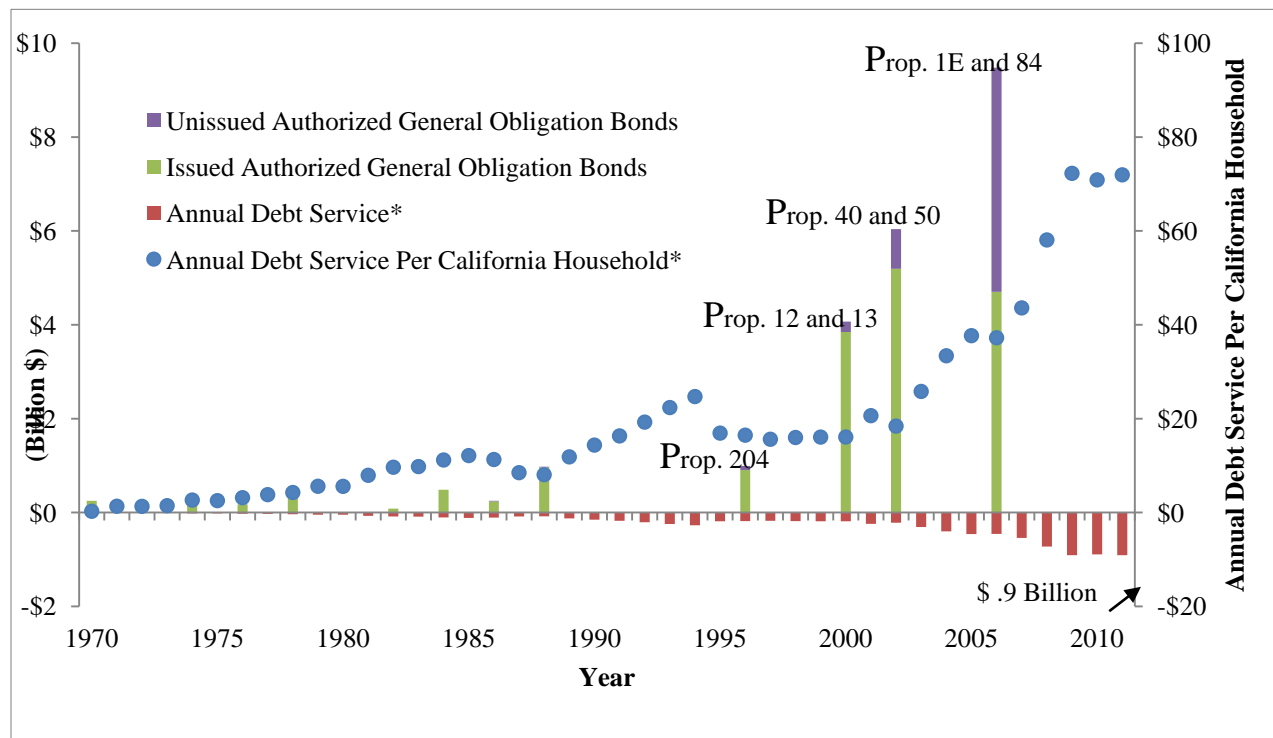
**Figure 7-5. General Obligation Water Bond History, 1970-2012**

Figure note: Debt service is applicable to issued GO bonds only.  
Source: DOF, 2012

Figure 7-5 illustrates the time series of outstanding GO bond funding for water-related activities. Annual debt service for outstanding water bonds is approaching \$80 per household because water bonds make up a larger proportion of water funding. For comparison, total State annual debt service is \$365 per household (DOF, 2012). Authorized GO bonds and Federal funding accounted for approximately two-thirds of total water management expenditures in FY 2012. State bonds have provided a significant source of water management funding in California in recent years as Federal and local expenditures decreased.

## State Government IWM Role and Partnerships

This section summarizes the current and future role of State government in integrated water management. It includes a description of current and future State government obligations and future roles in investing in IWM innovation and infrastructure. A more detailed description of the State's role can be found in chapter 3.

In reviewing the history of water development in California, the role of the State and federal government was demonstrated by their financing major improvements to promote population growth in rural, suburban and urban communities as well as economic development. The thinking was that broad based project financing would allow for major projects that crossed watersheds or had a broad based benefit. Over the past few decades, government's role also began to include environmental protection and enhancement. More recently, the State has taken on a more focused role of promoting sustainability and making sure that disadvantaged communities have safe water and sanitation.

## Basic Obligations

The basic day-to-day obligations of State government in IWM include:

- **Represent California in government-to-government interactions** with the federal government, other states, and other sovereign nations and tribal governments.
- **Meet basic public health and safety needs** by regulating minimum public health standards.
- **Protect public trust resources** by regulation and in planning and allocation of water resources. The public trust doctrine recognizes that certain natural resources, including water, tide and submerged lands, the beds and banks of navigable rivers, and fish and wildlife resources are owned by the public and held in trust for present and future generations of Californians.
- **Protect unique real property interests.** The State has a fundamental responsibility to California taxpayers to protect the State real property assets it owns and reduce State liabilities.

## Investing in Innovation and Infrastructure

State government should take a lead role in investing in innovation actions for the benefit of all regions. Innovation includes a broad range of activities that comprises governance, planning and process improvements, data, tools, and water technology research and development. The State's investment in innovation will provide processes and information that will aid decision making throughout the state and support more cost-effective infrastructure investments by regional and local entities. The four following areas should be the focus of future state investment:

- What regions cannot accomplish on their own
- What involves interregional, interstate, or international issues
- What the State can do more efficiently
- What provides broad public benefits

## Total Future IWM Costs

This section summarizes total expected future IWM costs throughout California and across local, state and federal governments. Due to the many data gaps that and lack of a consistent method, this estimate provides only a rough idea of potential IWM costs. Additional engineering, economic, and risk characterization studies are needed to develop accurate and detailed projections of the California's future funding needs (see *Nest Steps* section below). That said, a reasonable assumption could be made that over \$200 billion of expenditures will be needed over the next decade.

Even making the assumption that 10 years of expenditures would rehabilitate and replace deficient infrastructure, close to \$190 billion would need to be spent over the next decade. This amount applies to the total of State, federal, and local investments. Local entities will pay the majority of these costs. State government investment in innovation will be only a small portion of this estimate, perhaps less than a few \$100 million. State government investment in infrastructure will depend on the future authorizations and funding mechanisms (described below) that are ultimately made available.

The Flood Future Report identified more than \$50 billion in needs for specific projects and improvements that are now in the planning cycle. These projects (mostly site specific) collectively would not provide statewide protection from the 100-year storm event. The total investment needed to reduce risk against the 500-year flood event could be assumed to be several times the \$50 billion amount. This is based on the 5.8 million increase in population exposed within the 500-year floodplains compared to 1.4 million in the 100-year floodplain. However, willingness to fund flood management for a 500-year storm event has



not been historically demonstrated. For this reason, a conservative estimate for flood management investments based on what Californians would be willing to accept and pay for could be two times the \$50 billion estimated for existing proposed projects, or more than \$100 billion.

ASCE's "California Infrastructure Report Card: A Citizen's Guide-2012" estimated the expenditures needed by California in several infrastructure categories. Those categories related to IWM are shown below, along with the projected expenditures needed over the next 10 years.

- Levees/Flood Control--\$2.8 billion per year
- Urban Runoff--\$6.7 billion per year
- Wastewater--\$4.5 billion per year
- Water--\$4.6 billion per year

In addition, there are approximately ten thousand water projects identified in the state's 48 integrated regional water management plans. Although it is unlikely that every project must be implemented, the sum of all estimated costs is several hundred billion dollars.

## Funding, Who and How

This section includes information for how IWM costs can be distributed and through what finance strategies. An essential first step that has been completed in Update 2013 is identifying and clarifying what shared values are particularly important to guiding the finance framework. This chapter will also present an analysis of available finance strategies. More information can be found in chapter 3 and the Reference Guide.

### Funding Values

The funding values described below are to be used for guiding IWM decisions regarding investment of State government funds. The scope includes IWM programs and projects directly administered by the State as well as future State IWM loans and grants that are distributed as incentives to regional and local governments. This framework is not intended to direct regional or local finance decisions; nor is it intended to modify existing State investment frameworks for ongoing financial activities such as distribution of currently authorized G.O. bonds. It is also not intended to provide guidance for financing specific projects at any scale (statewide, inter-regional, regional or local). These funding values are divided into three main categories, Prioritization of State Government Expenditures, Fiduciary Responsibility, and Beneficiary and Stressor Responsibility. These values are expected to guide preparation of future criteria for State government funding.

### **Prioritization of State Government Expenditures - Investment decisions will include equal regard for economic, environmental, and social criteria.**

- a) Decisions are informed and priorities are set using a process that includes broad stakeholder interests and includes public participation.
- b) Preference is given to multi-benefit projects that are regional or statewide in nature.
- c) Cost and benefit data used in the analysis include monetary and nonmonetary life cycle costs and benefits with an emphasis on long term planning. Stranded costs are avoided, and all costs during the life of a project are included in the analysis, such as monitoring, planning, construction, operation, maintenance, mitigation, and externalities.

- d) Decisions are made using best available data and knowledge. Deferring decisions until more is known generally increases cost of implementation, creates hesitation, and forgoes opportunities to create benefits.

**Fiduciary Responsibility - State government will be fiscally responsible with State monies.**

- a) Decisions about investments are in line with reasonable expectations about availability of future revenues, cost of borrowing and risks of indebtedness. This includes matching investments with appropriate funding mechanisms.
- b) Good stewardship of State government monies includes transparency, accountability, discipline to spend reasonably, clarity of purpose and personal integrity by those entrusted with public monies. Good stewardship engenders trust and increases the public's willingness to pay for future IWM activities.
- c) State government funding is not redirected from its authorized purpose.
- d) Amount of time needed to repay debt does not exceed the life of a project. This value applies to fiscal, natural and all other emergencies.

**Beneficiary and Stressor Responsibilities- Those receiving benefits or creating impacts pay for them.**

- e) When beneficiaries can be identified, those receiving benefits pay for them. A nexus and proportionality is established between charges and benefits. This value recognizes the concept of equity regarding value exchange (i.e. paying in proportion to what you receive).
- f) State government has a responsibility to help communities that can't help themselves. State funding is also appropriate for helping communities meet State regulations that they cannot fully cover.
- g) State funding pays for broad statewide benefits.
- h) State government pays for persistent impacts from historical activities that are no longer creating impacts of the same type or magnitude (legacy impacts), but only in cases where stressors cannot be identified or no longer exist. In some cases legacy impacts may go unaddressed indefinitely.
- i) State funding is proportional to the broad public interest. Assignment of costs to entities that currently engage in an activity that involves an impacted area is proportional to their current impacts ( not legacy impacts). Some impacts need to be addressed before costs are assigned.

**Future Financing Mechanisms**

California's flood, water, and wastewater infrastructure is aging and in serious need of additional investment, yet the future of water financing remains uncertain. Water management strategies are being integrated but water management funding remains fragmented limiting opportunities for further integration. Future financing mechanisms will need to capitalize on local, state, federal, public and private, cost sharing by further integrating water management. Even with further integration, securing adequate funding will require innovative financing mechanisms such as those used for other public infrastructure.

Budget balancing efforts in California and increased attention on the federal deficit will limit the political viability of future revenue generation, in the near-term, through public debt such as G.O. bonds. The

public is increasingly aware of and adverse to hidden risks and long-term borrowing costs. To secure a revenue stream for future California water management, State government will need to explore innovative finance mechanisms at the federal, tribal, state, and local levels.

There is no single solution to securing a reliable funding stream for integrated water management. It is likely that solutions for reliable funding will be driven by local interests and solutions will need to be considered at a local and/or regional scale, increasing the need for further integrated water management.

The financing mechanisms described below are considered in Update 2013 as possible tools for financing State government's role for advancing integrated water management activities and programs.

### **State Water Innovation, Incentive, and Infrastructure Fund**

The Update 2013 finance framework includes several proposed improvements in prioritization and management of State government expenditures for IWM. One way to implement several components is to create a State Water Innovation, Incentive Investment Fund (3I Fund). Such a fund can be designed to increase return on investment and enhance accountability by using the following objectives in developing such a fund:

- a) Increasing the reliability and predictability of State and regional IWM funding
- b) Using competitive incentive programs and a consistent investment framework to eliminate State funding earmarks
- c) Increasing flexibility to reflect local and regional conditions and IMW goals and investment priorities
- d) Reversing the trend of prioritizing funding by shovel readiness
- e) Providing an opportunity to consolidate existing and future IWM revenues sources. This will improve the ability to track cumulative impacts on regional and local entities from the variety of State regulations, fees and taxes.

The fund can provide a common prioritization framework yet be endowed by multiple finance mechanisms such as general fund, future G.O. bonds and other sources. Money from this account can be used for State government IWM innovation activities, grants and loans for regional incentives (See Chapter 8 *Implementation Plan*), mitigating legacy impacts, assisting economically disadvantaged and/or other communities that cannot cover State regulatory compliance costs. The 3I Fund framework can be periodically reevaluated and adapted to meet changing conditions and priorities.

### **State Water Bonds**

State government will likely continue to periodically bring new water bonds to the public for vote. These usually specify uses of the bond funds for specific periods of time. Future bond language could provide funds directly to the State Water Innovation, Incentive, and Infrastructure Fund for projects and programs that meet criteria established for the Fund.

### **State General Fund**

The State General Fund has traditionally provided a portion of the funding for water related projects and programs, but this funding has been decreasing in recent years as bond funding was available. Future

contributions from the General Fund could be made to the State Water Innovation, Incentive, and Infrastructure Fund for projects and programs that meet criteria established by the Fund.

### **Statewide Water Use Fee (Public Goods Charge)**

A statewide user fee was considered in the 2006 Governor's Plan. Another term for a statewide user fee is a public goods charge (PGC). The 2006 Governor's Plan proposed a user fee for different types of water users including urban, agricultural, and industrial. It proposed a flat monthly charge on every home and business and the charge would vary by urban, agricultural, and industrial users. The PGC option has also been reviewed by researchers<sup>1</sup> working on behalf of the California Public Utilities Commission and the Water Energy Team of the Climate Action Team. It was also discussed in early drafts of the Bay Delta Conservation Plan. Monies made available from a Statewide Water Use Fee could be made to the State Water Innovation, Incentive, and Infrastructure Fund for projects and programs that meet criteria established by the Fund.

A PGC would be implemented to secure a long term revenue stream for water infrastructure financing. A PGC could take many forms but would fundamentally be a fee or tax which would be paid by every water user in the state. The fee or tax could be structured as a flat rate (everyone pays the same), percentage rate (based on proportional usage), or volumetric charge (everyone pays per unit of water used). A volumetric charge best links personal usage to cost and this method would be the most economically efficient.

### **Potential Federal Funding Sources**

Several potential federal actions could provide funding for California IWM. Depending on actions by Congress, funding may be available to the State or local governments.

- **Federal Water Infrastructure Trust Fund.** The Water Infrastructure Trust Fund, if established by Congress, would create a stable and long term revenue stream to finance water infrastructure projects. The current proposal under consideration is H.R. 3145 and includes over \$10 billion annually with a focus on clean water projects. The funding source is not identified in the current version of the bill but previous proposals to generate funding include excise taxes, corporate profits taxes, and fees on relevant pollutants and discharge.
- **Water Infrastructure Finance Innovation Act (WIFIA).** The Water Resources and Environment Subcommittee has circulated a draft WIFIA bill (H.R. 3145) and held two hearings on the topic in 2012. One of the main benefits of the proposed program would be to provide low cost capital to infrastructure projects. However, a key drawback is that the program requires projects have a revenue stream – such as user fees based on water use.
- **National Infrastructure Bank.** An infrastructure bank manages capital and provides loans for infrastructure development. The current Administration has a political platform that includes increased infrastructure funding and an infrastructure bank has been considered by Congress on

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<sup>1</sup> U.C. Berkeley Goldman School of Public Policy, *Implementing a Public Goods Charge for Water*, by Kasandra Griffin, Greg Leventis, and Brian McDonald.

several occasions. Propositions<sup>2</sup> include an independent federal agency, federal corporation, government-sponsored private enterprise, or non-profit corporation to establish the bank. The most recent proposal, H.R. 402, would create a bank similar to the FDIC which would include a board of directors to oversee operations. The bank would be authorized to issue bonds and subsidies to infrastructure projects, borrow and, in turn, lend to commercial infrastructure projects, and purchase and sell infrastructure loans and securities on the market.

- **Private Activity Bonds.** Congress is considering modifying Private Activity Bond restrictions. Private Activity Bonds are tax-exempt bonds that are available for privately owned water facilities operated by a government unit or charge water rates that are approved by a subdivision of a community. Private agencies are typically not eligible for tax-exempt municipal bonds, which limits access to capital to finance new infrastructure projects. This is generally a poor outcome since private agencies are focused on return to investors and, consequently, pioneer new technologies and cost innovations. Expanding PABs could capitalize on these cost savings and new technologies and encourage additional investment from the private sector.
- **Build America Bonds.** Congress is considering reinstating Build America Bonds. As part of the American Recovery and Reinvestment Act, Congress created Build America Bonds to encourage job creation through infrastructure projects. Eligible projects were not limited to infrastructure and did not allow for private company participation. The bonds stopped being issued in December 2010. Congress is considering reinstating the bonds to target water infrastructure projects.

### Private-Public Partnerships

Private sector partnerships (commonly called P3s or PPPs) are partnerships between government and private agencies. Just under one-sixth of M&I water in California is currently delivered via private companies, approximately equal to the U.S. average. P3s have seen limited application in California because they are restricted to pilot project programs for water management. Neighboring states with broader enabling legislation in place include Oregon, Washington, Nevada, Utah, and Colorado. There is consequently room to expand these partnerships in California.

P3s offer two key benefits, including an ability to capitalize on innovative technologies and an ability to capitalize on private cost efficiencies. Similar to other industries, private water agencies operate to maximize the return to company owners and consequently have an incentive to innovate new technologies. Private agencies are likely to focus on cost (and water) saving management strategies.

P3s could alternatively focus on increasing the availability of capital to private agencies. This may also encourage increased risk sharing. The state is able to borrow at a better rate than private agencies and this will benefit private investment under P3s. One drawback is that this may create an incentive for riskier projects to be pursued as companies will seek assistance in securing funds for projects with higher borrowing costs (typically riskier projects).

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<sup>2</sup> Congressional Research Service, *National Infrastructure Bank: Overview and Current Legislation*, R42115, by Claudia Copeland, William Mallett, and Steven Maguire.

P3s can also help the state use renting and leasing as a finance strategy. This is where privately owned infrastructure is made available for public use. The government rents or leases the facilities from the private entity. This is not commonly used in water infrastructure, but may be more common with additional P3s.

## Trade-Offs

This section summarizes a development proposal for a decision support system to examine funding scenarios and help quantify trade-offs. More information can be found in Chapter and 6 and Volume 4 Reference Guide.

California faces tough decisions and trade-offs to allocate increasingly scarce funds to support integrated water management. Water management must compete for financial resources against a myriad of other infrastructure demands. When investment needs exceed existing available funding levels, it becomes increasingly important for decision makers to prioritize new water projects while accounting for the trade-offs.

Integrated water management decisions typically involve some type of collaborative process. The decision process can be characterized by two fundamental components, decision support and decision making. Decision support involves consideration of the entire system and how (or if) a potential project fits within existing infrastructure and policies. Decision making requires additional information such as selection criteria, availability of funds, and project costs and benefits. The decision making process typically results in some type of ranking of alternatives, whereas the decision support process evaluates how a project fits within a system.

A consistent and understandable framework for displaying important costs, benefits, and other impacts of potential projects can help inform these decisions. A Decision Support System (DSS) is a general term for a computer-based approach to provide structured and consistent information for decision making. When options are numerous, interrelated, and have complex effects, decision makers need to be able to screen the options, eliminate those that are clearly inferior, and identify the smaller number that warrant further consideration and analysis. Both the screening step and the detailed analysis step can be greatly assisted by a DSS.

## Next Steps

While the framework is intended to guide decisions on State government funding, there is value in considering the framework to identify and sequence all relevant finance planning activities at any level of government. Future Water Plan Updates will continue to work to advance and refine the financial planning framework for Update 2018 and beyond. Future work is expected to touch on each component (as developed by the Finance Caucus for the Finance Storyboard) of the framework in the following ways:

- **IWM Scope and Outcomes (Component 1)** – Revisit, clarify and adapt the scope of integrated water management to changing conditions and priorities.
- **IWM Activities (Component 2)** – Develop more specificity regarding the types of activities that State government should invest in with a clearer nexus to the types of anticipated benefits.

- **Existing Funding (Component 3)** – Continue to compile and synthesize data that tracks historical water related expenditures across local, state and federal governments in California.
- **Funding Sustainability (Component 4)** – Work with the State Agency Steering Committee to identify where potential funding gaps exist between the State IWM activities described in component 2 and existing funding levels and sources. Collaborate with regional water management groups to do the same for local and regional IWM activities.
- **State Role and Partnerships (Component 5)** – Continue to clarify and elaborate on the future role of State government to support a more specific description and estimate of future costs.
- **Future Costs (Component 6)** – Estimate future funding demands by: (a) launching IRWM, city, county and special district data pull; (b) work with State Agency Steering Committee to estimate the funding demand for existing and future IWM activities.
- **Funding, Who and How (Component 7)** – Review and adapt Shared Values for State IWM Investment per changing State government and stakeholder priorities. Review and update menu of available finance strategies; particularly the analysis of their implementation feasibility and their appropriate uses. Continue to develop a prioritization method and rationale for apportioning IWM investment by the categories and subcategories developed in the Update 2013 Finance Planning Framework (i.e., Innovation, Infrastructure). Criteria should be informed by the Update 2013 guiding finance shared values described in Chapter 7. The geographical and categorical apportioning method and rationale should be driven by an assessment/estimate of resource management needs from California’s upper watersheds to its near coastal areas.
- **Trade-Offs (Component 8)** – State government should develop a decision support system to provide guidance and leadership for: (1) defining uncertainties of future costs and benefits; (2) prioritization of (and rationale for) State government expenditures based on the basic obligations commitments, innovation and leadership of State government as described in Chapter 7. This includes definition of IWM benefit categories, benefit metrics, trade-offs, calculations and methods for apportioning costs across financiers. It also includes defining public benefits and developing a clear and consistent methodology for assessing public benefits.

Chapter 8 Implementation Plan provides a finance objective together with related actions for implementation.